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## The Future of Science

No one in the past century could have forecast the future of science, even for a few decades. In 1890, for example, no one foresaw the discovery of X-rays by Roentgen, the mode of transmission of yellow fever and malaria and the resulting methods for their control, the rapid development of internal combustion engines and motor vehicles, the possibilities of steam turbines and long-distance transmission of electric energy, and dozens of other scientific developments and applications of science which have profoundly changed the world. No one now can predict with any confidence the future of science or of its effects upon mankind. Yet it may not be useless to consider at least the means by which it is being advanced.

On looking over the great names in science one is struck by the fact that most of them are of scientists who worked in relative isolation. It is true of Archimedes and Aristotle, of Galileo and Newton, of Lyell and Darwin, of Dalton and Mendeleeff, and of many other men whose names are bright on the pages of science. These scientists were not simply, or even primarily, observers; their active and penetrating minds grasped the observational and experimental evidence relative to the subjects in which they were interested and organized it into coherent scientific theories. Synthesis is the final step in the scientific process. It is not concerned particularly with the difficulties and techniques of obtaining observational and experimental data, but concentrates on establishing the properties of the finished structure. It provides the answer that the world desires to have.

The progress of science will continue to depend upon both observations and theories. As science has advanced, the securing of observational materials and the conducting of experiments for further advancement have become rapidly more difficult and costly. For example, an astronomical observatory a century ago was essentially one or two telescopes a few inches in diameter under a suitable shelter. Now an observatory usually requires several telescopes of various kinds, mounted and moved with fine precision, a large quantity of auxiliary equipment, a machine shop, a photographic laboratory, a physical laboratory, computing machines, a library and often a branch institution in another latitude. Somewhat similar increases in facilities for research are needed in all the major sciences. Biological and medical laboratories, for example, now require better physical and chemical equipment than physicists and chemists themselves had a generation ago. From the point of view of the individual sciences, these rapid increases in their needs for variously-equipped laboratories are evidences of their remarkable advancement. From the point of view of science as a whole, they are proofs that the various sciences are concerned with somewhat different but interrelated aspects of the same things.

Another factor that has been very important in the advancement of science is the conferring of scientists with one another. The early Greek scientists and philosophers made pilgrimages to Egypt and Assyria and carried home to rising Hellas the lore of the wise men of those ancient and decaying peoples. As the intellectual vigor of the Greeks declined, the Arabs, in turn, seized the torch of science and carried it during the first centuries of the Middle Ages. Their scholars followed their militant armies through western Asia, northern Africa and southern Europe, and erected mosques and libraries on the ruins of the cities they conquered, while Greek science and literature were preserved in monasteries all over Europe. With the Crusades a new period of more frequent intercourse between scholars began which was followed by the revival of learning, the founding of universities in Italy, France,

England, Spain and Austria, the invention of printing, the voyages of Columbus and Magellan, the work of Copernicus and Gallileo, Kepler's laws of the planetary motions, and Newton's Principia. Science was definitely on the march.

From about the time of the beginning of the Crusades (1096) the migrations of scholars from one center of learning to another throughout Europe steadily increased in volume and importance and continued until the first World War. Those whose memories reach back thirty or forty years will recall what inspiration young American scientists received from periods of study in European universities. And no one could read the Proceedings of the meetings of the Association during the first fifty years of its existence without being deeply impressed with the great contribution these gatherings of scientists made to the advancement of science in this country. In fact, the first object of the Association, as declared in its original constitution, was "... to promote intercourse among those who are cultivating science in different parts of the United States. . . ." In more recent years the number of scientific societies has increased, even into the hundreds, and their meetings and the journals they are publishing have been as essential for the advancement of science as their laboratories and equipment.

Thus the phenomenal advances of science in the past have been made in three principal ways: (a) by genius working alone, (b) through careful and recorded observations and experiments, and (c) under the inspiration of conferences among scientists about the enchanting areas just beyond the borders of the known.

Genius flashes forth like a meteor, unproduced and unpredictable. It is not limited to any race or people, or to any particular latitude or longitude. It has often come up from obscurity and has flourished under poverty and persecution, as well as under the smiles of Fortune. Its origin is unknown and it does not reproduce itself. At present we can only hope that it will often come again.

Some of the best and most valuable scientific observations and experiments in the past have been made by amateurs, but clearly progress in the future, particularly in fields already far advanced, will come largely from massed attacks by well-equipped and powerful forces. The problem is how best to supply the necessary means and the qualified and ambitious personnel. Up to the present the universities have been the fountains from which have flowed the most abundant streams of creative scientific research, as the con-

tents of scores of scientific journals abundantly attest. These institutions have been founded and supported by the peoples of many countries by private initiative and sustained interest, and secondarily, in our country, by popular pressure on local government such as those of states and cities. At present there is a considerable degree of pessimism concerning the future of our universities, their financial support and their continued independence. Although the shocks of war are jarring seriously our social and economic structures, it is not likely that these citadels of freedom will be abandoned to political support and control. If they hold steadfastly to their high traditions they will continue to be sustained by those who love liberty more than luxury, for let there be no doubt that in these tragic hours the love of liberty is being born in human hearts throughout the world as it was being born throughout Europe in the most dreadful days of the French Revolution.

Within a few decades a considerable number of great foundations have been created in this country for the purpose of advancing science, improving education, or otherwise benefiting mankind. The wisdom with which they have been set up and administered matches the princely sums that have been made available for their purposes. The founders have clearly regarded themselves as trustees of the vast resources they have commanded and several of them have provided that both principal and income shall be completely expended within a specified period of time in order that one generation, after it is dead, shall not directly interfere with the destinies of another. In spite of the dissipation of wealth by war, it is not likely that the patterns set by these foundations will be forgotten in the years to come.

Certain domains of scientific research and administration, especially those which are concerned with immediately practical applications affecting all the people, have been supported by governments and will continue properly to be under governmental control. Obviously all such matters as armaments pertaining exclusively to national defense, standards of weights and measures, quarantines against pests and infectious diseases, and the use and protection of vital national resources should be administered by governmental agencies. They should be administered, however, under the constant watch of critical eyes of scientists and other citizens lest they become infected with the dry rot of political service or be used in support of political machines.

The final and most recent support of scientific research is by the great industries. Originally they were interested primarily in applications of science that promised to be of commercial value. After experience proved to them that it is not possible to foretell with certainty what will be useful to mankind, their horizons were widened. Since they recruit their staffs mostly from the universities they constantly have the advantages of new blood and the academic point of view respecting the purposes of science and the methods of research. In return the great industries have supported research in the universities in a large and rapidly increasing scale. Let it be recorded to their credit that in many instances they have given this support without maintaining any control and wholly free from all conditions except that the investigations be in certain general fields. May these relationships continue on the same high plane and steadily increase for the future advance of science and the welfare of our social order.—F. R. M.

### Life in Merry England

Dr. T. D. A. Cockerell has been an honored member and fellow of the Association continuously since 1901, and he was President of the Southwestern Division in 1926. Dr. Cockerell was born in Norwood, England, and his brother, Douglas Cockerell, lives in Letchworth, England. From time to time Dr. Cockerell has kindly sent to the Permanent Secretary descriptions of conditions in England received from his friends.

Among the most interesting of recent items are the following comments on the lives of English children under war conditions:

Every now and then you realize the point of view of children to whom war is the normal way of the world. Many have never seen street lamps alight or lit-up shop windows. A great friend of ours who has a very dainty home and especially attractive china, had some children to tea, and the thing that impressed the children most, was the highly colored tea cups. They had never seen anything but the utility chinaware which is quite plain.

You might be interested to hear how these girls took their examinations this year. We are very near Croydon, 1½ miles from the aerodrome, and had quite a good pounding during the 1940-41 blitz, but it has been worse during the flying bomb era. Sixty-five of these things burst in the near neighbourhood of the school, and we had several hundreds exploding within 2 to 5 miles of us. Molly was cut about the eye while she was working in her home the day before the examination was held, and her home was in a terrific mess, soot, rubble, ceilings, glass all over the place. The cut was slight, and she cleaned up the mess as best she could, and turned up at school quite calmly the next day. I settled the candidates down in their rather uncomfortable narrow damp stuffy tunnel of a shelter, and they worked at their papers during the next

two weeks in these shelters. I watched many a bomb fly over us, with my heart in my mouth, wondering whether it was going to make a sudden dive on the shelter, but the girls worked quite calmly on. They had very little sleep too, during this period, as the bombs vibrate so much and the explosion is so loud that it is difficult to sleep through an attack. I was proud of the way they tackled the situation, and I believe there is good stuff in the younger generation; courage and idealism combined with a desire to find out the truth about things, and these qualities should enable them to build a freer and happier world than we have ever known.

London has suffered terribly in the last months. Visitors here cannot appreciate what the long bombardment of London has meant. One needs to live here to understand how grim life has become in these years of war. But the children are just wonderful. There are about 400 of them in my school (11-17 years), and if you walked in tomorrow morning, you would never guess that nearly all of them have had their homes blasted or destroyed since June. Some of them have suffered in this way two or three times. They are bright and gay and full of life. At the moment their thoughts are turning to plans for Christmas.

This morning I have received some colored postcards. It is very good of you to send such delightful pictures at a time when there are none being printed in England. I shall have great pleasure in showing the cards to my natural history students. The other day, in the train, I had an interesting conversation with an American soldier. His ancestors moved from Scotland, and he had a sympathetic interest in this country. He told me that many of his fellow Americans were apt to compare unfavourably conditions here with conditions in America and that he had the utmost difficulty in making them realize that they were comparing England after five years of war with their knowledge of peace time America. The White Paper just published will give some idea of the effort which we have made here, but the White Paper can hardly convey the idea of adjustment such as we have in Letchworth, where a population of 17,000 living in 5,000 houses suddenly had to take in 5,000 evacuees from the London area, and later on thousands of transferred workpeople.

The English have not only faced their dangers and endured their trials with great fortitude, but they have extended generous help to those who are more unfortunate. The following extract from a letter from one Britisher to another will serve as an illustration:

About six months ago there was a great drive for knitted children's vests for the continental children. The authorities provided the wool, and all over the place, in trams and at meetings, women were seen knitting these vests. Hertfordshire alone was asked to provide about a half million vests. I have not heard how near they got to this mark, but a very large number must have been made. The cry for warm clothing from Greece, Belgium and Holland is very great, and especially for children's warm clothes. Greece alone is to get about 150,000 tons of food, medical supplies and clothes every month, and there will be equal demands from other countries.

Prime Minister Winston Churchill was speaking words that his countrymen could and did understand when, on June 4, 1940, after Poland had been blasted and ravaged, after Denmark



and Norway and Holland and Belgium had been crushed and while the armies of France were dissolving, in the very hour when the British Army was escaping from Dunkirk with its arms and munitions left behind on the shores of France, he rose in the House of Commons and said:

We shall not flag or fail. We shall go on to the end. We shall fight in France, we shall fight on the seas and oceans, we shall fight with growing confidence and growing strength in the air, we shall defend our Island, whatever the cost may be. We shall fight on the beaches, we shall fight on the landing grounds, we shall fight in the fields and in the streets, we shall fight in the hills; we shall never surrender, and even if, which I do not for a moment believe, this Island or a large part of it were subjugated and starving, then our Empire beyond the seas, armed and guarded by the British Fleet, would carry on the struggle, until, in God's good time, the New World, with all its power and might, steps forth to the rescue and the liberation of the old.

That was the roar of the British Lion.

#### Newly Elected Emeritus Life Members

In 1911, the sum of \$5,000 to be known as the Jane M. Smith Fund was bequeathed to the Association, subject to the condition that the principal should be preserved and the income from it used for establishing emeritus life memberships.

The records of the Association show that Miss Jennie M. Smith, of Allegheny, Pa., became a life member in 1901, and her name appears thereafter in the list of members until 1910, after which it does not occur. Since no person by the name of Jane M. Smith appears on the membership rolls of the period, it is likely that Jane M. Smith who gave the \$5,000 for establishing emeritus life memberships and Jennie M. Smith, a life member of the Association, were the same person.

Previous to this year 151 members of the Association whose memberships were of long standing had been elected Jane M. Smith emeritus life members. At present 55 of them are still living. Fortunately it is possible this year to elect 15 additional emeritus life members under the provisions of the Jane M. Smith Fund. Three of the 15, Mr. John Mason Boutwell, Miss Marcia A. Keith and Dr. George A. Soper, have been members of the Association continuously since 1897. They were elected to fellowship in 1905, 1906, and 1907, respectively. Miss Keith is affiliated with the sections on physics and mathematics, Mr. Boutwell with the sections on geology and engineering, and Dr. Soper with the section on engineering.

The remaining 12 newly elected emeritus life members have been members continuously since

1898. Their names in alphabetical order, with the years of their election to fellowship placed in parentheses, are as follows: Dr. Comfort A. Adams (1910), Prof. Edward Bartow (1906), Dr. Charles William Dabney (1901), Dr. Frederick W. Ellis (1906), Mr. William L. W. Field (1913), Dr. Nellie E. Goldthwaite (1910), Dr. Harry M. Goodwin (1901), Dr. Thomas H. Kearney (1902), Prof. Willis I. Milham (1905), Dr. Jonathan T. Rorer (1906), Dr. Philip Sidney Smith (1909), and Miss Harriet Newell Wardle (1911). Dr. Rorer is affiliated with the section on mathematics; Drs. Adams, Ellis, and Goodwin, with the section on physics; Prof. Bartow and Dr. Goldthwaite, with the section on chemistry; Prof. Milham, with the section on astronomy; Drs. Dabney and Smith and Mr. Field, with the section on geology and geography; Dr. Kearney with the section on the botanical sciences; and Miss Wardle, with the section on anthropology.

Dr. Dabney has the distinction of having been a member of the Association for 9 years, from 1881 to 1889, inclusive, before his continuous membership of 47 years that began in 1898. He is not only one of the oldest members of the Association in years of membership but also in age. Only Dr. Alfred Springer, of Cincinnati, an emeritus life member since 1928, is known to be both older and to have had a longer membership in the Association. Dr. Dabney was born in 1855, received the Ph.D. degree from Göttingen in 1880 and the LL.D. from Yale in 1901 and from Johns Hopkins in 1902. Among the many positions of high responsibility which he has held during his long and eventful life are the presidency of the University of Tennessee from 1887 to 1904, and of the University of Cincinnati from 1904 to 1920.

Since these newly elected emeritus life members became members of the Association in 1897 and 1898, science and the Association have both moved far. In 1897 the total membership of the Association was only 1,782, smaller than the number of persons received into membership during last October and November, and it declined to 1,729 in 1898. At that time many of the societies now affiliated with the Association had not been organized.

It was in 1894, only a little before these newly elected emeritus life members became members of the Association, that Bateson found that a great number of examples of large variations in living organisms seemed to indicate that evolution proceeds by finite jumps, instead of gradually, as had generally been believed, and de Vries an-

nounced his mutation theory near the close of the decade. In 1895 Roentgen discovered X-rays. Ross worked out the life history of the malarial parasite in 1898, and Reed demonstrated the mode of transmission of yellow fever in 1900. When these newly honored members were first admitted into membership in the Association, electric lights and automobiles were still novelties and the radio was not even a dream. They have lived in a golden age of the natural sciences, and in a stormy period of human relations.

### To Our Armed Forces

In the November issue of the BULLETIN a few comments were made on the fact that a surprising number of members of the Association who are in our armed services on active duty at the war fronts have maintained their keen interest in science. This note has brought comments that fully confirm the earlier statement. For example, a letter received from private C. Hesseltine contains the following sentences:

Although I am at present far from the field of my interests in microbiology I value my membership in the American Association for the Advancement of Science because it helps me keep in contact with what is occurring in this and related fields. I expect to return to complete my graduate studies. . . . The postwar world will demand more of science than ever before, and I feel that I belong to an organization which will directly contribute to the betterment of the world in the days that we are all looking forward to. To me the note in the BULLETIN is pleasant and heartening, for it shows that many of us in the armed forces are actively interested in the science of today and that of the future.

Thanks for the letter, soldier Hesseltine! Your words are heartening to us who must remain at home. We, too, look forward to the future—with increased confidence when we receive such letters as yours; with misgivings when we read of unworthy actions of some of your fellow soldiers. This means, of course, that we think that much of the future of our country and of the world will depend on you. In saying this, I do not refer to the parts you are playing on all battle fronts. Valorous deeds were expected of you, and you are living up to our expectations. Such things are taken for granted in the descendants of the men and women who transformed a vast wilderness into this great country of ours, and hence comments on them would be superfluous.

It is, of course, necessary to win the war, and it is obviously equally necessary to preserve a country, and a world, that will have been worth saving. At the moment I am thinking primarily of the roles that we shall want you to play when

you return home after the close of the war. When we read in the daily press that large numbers of our soldiers have disappeared into the Paris underworld we are hurt. When the War Department reports officially the sentencing of men and officers to imprisonment for long terms of years for stealing and selling in the black market supplies for the Army which are needed at the battle fronts, our hearts sink even though we know that these traitors are a very small number relative to the hundreds of thousands of comrades whom they have betrayed. When the Army and Navy Journal published that 3,185 of our officers and enlisted personnel had been tried by general court-martial in the United Kingdom alone between July 15, 1942, and August 1, 1944, and that 2,858 of them were convicted of crimes, we felt as though we had lost a great battle. Of these 2,858 criminals, 19 were convicted of murder, 7 of whom had been executed and the remainder sentenced to life imprisonment under our own military judicial procedure.

These reports are not being relayed as a reproach to you, for you regret them as we do and even more, but to call on you, first to stamp out such practices from our armed forces, and, when you return home, to take the lead in the more important task of raising much higher the standards of personal and social integrity in our country. Your travels and varied experiences will have matured you, your dangers will have made you thoughtful, for the next two decades you will be the most virile part of our population, and in the future we shall depend on you in peace as much as we have relied on you in war. Fortune is placing the future of our civilization in your keeping to an extent that has rarely been paralleled in the history of any people.—F.R.M.

### AAAS-Gibson Island Conferences, 1945

Ten AAAS-Gibson Island special research conferences will be held this coming summer between June 11 and August 17. Each one will continue through five days, beginning on a Monday.

The dates, subjects, chairmen and vice chairmen of the ten conferences are as follows:

1. Petroleum chemistry. June 11-15. George Calingaert, chairman; S. S. Kurtz, vice chairman.
2. Catalysis. June 18-22. P. H. Emmett, chairman; H. H. Storch, vice chairman.
3. Organic High Polymers. June 25-29. Emil Ott, chairman; C. S. Fuller, vice chairman.
4. Medicinal chemistry. July 2-6. W. G. Bywater, chairman; H. A. Shonle, vice chairman.
5. Textiles. July 9-13. W. F. Busse, chairman; D. H. Powers, vice chairman.

6. Food and nutrition. July 16-20. R. J. Block, chairman; F. L. Gunderson, vice chairman.

7. Vitamins. July 23-27. James Waddell, chairman; N. B. Guarrant, vice chairman.

8. Cancer. July 30-Aug. 3. Dean Burk, chairman; J. Bittner, vice chairman.

9. Corrosion. Aug. 6-10. G. H. Young, chairman; H. H. Uhlig, vice chairman.

10. Instrumentation. Aug. 13-17. J. G. Ziegler, chairman; R. D. Webb, vice chairman.

This is the eighth season of the AAAS-Gibson Island special research conferences on chemistry and related subjects. They are held on Gibson Island, an island of about 2 square miles lying in Chesapeake Bay about 20 miles south of Baltimore from which it may be reached by bus. The island, which is connected with the mainland by a causeway, is controlled by a corporation established by residents for the purpose of excluding the general public. The property of the Association, purchased with funds supplied by 33 industrial laboratories, consists of a large residence and an auxiliary building situated on a wooded lot of 3.6 acres on the island. These buildings provide space for conferences, a reading room, and living accommodations for about 60 persons. Usually the conferences are limited to 60 or 70 persons. Women and those who cannot be accommodated at the Association property may make arrangements through the Director of the conferences to live at the Gibson Island Club or in one of its cottages. All meals are necessarily taken at the Club. For further information, write to Dr. Neil E. Gordon, Director of the conferences, Chemistry Department, Wayne University, Detroit 1, Mich.

#### New Members of the Association

More than 2,465 persons have become members of the Association since last October 1. The officers of the Association welcome these new members and take this opportunity to place before them a brief outline of the history, purposes, and organization of this great scientific society which has admitted them to membership.

The American Association for the Advancement of Science was formally organized on September 20, 1848, with an initial membership of 461, which included nearly all the leading American scientists of the time. Among those of them whose names still occur frequently in scientific literature are Louis Agassiz, Joseph Henry, and Benjamin Silliman. In the 12 years from 1848 to 1861 the Association held 14 meetings. Then the Civil War broke out and no meetings were held for six years during which its membership fell to 415.

The Association was incorporated in 1874 by an act of Legislature of the Commonwealth of Massachusetts. By 1880 its membership had increased to 1,555, and at its meeting held in Boston that year 276 papers were presented. Twenty years later, in 1900, there were only 1,925 members of the Association, and at its meeting, held in New York, only 253 papers were presented. In 1900 *Science* became the official organ of the Association, all fields of science were being actively developed, and only 10 years later, in 1910, the membership of the Association had increased to 7,950.

During the war years from 1914 to 1918, inclusive, the progress of science was retarded throughout the world, and in 1920 the membership of the Association had increased only to 11,447. In this year, however, at the meeting in Chicago 1,011 addresses and papers were presented. In the following decade the membership of the Association increased steadily to about 18,000, after which it declined a little until 1935. Now it is considerably more than 26,000.

The last meeting before the United States became involved in the present war was held in Philadelphia from December 27, 1940, to January 2, 1941. At this great meeting, the one hundred seventh held by the Association, the program contained the titles of 2,164 addresses and papers. The following year, shortly after the Japanese attack on Pearl Harbor, the Association held a somewhat smaller but excellent meeting in Dallas, Texas, after which no meetings were held until the one at Cleveland, Ohio, last September 11-16. The immediate future will depend upon the course of the war.

The name of the Association indicates in a general way the purpose for which it exists. It will be observed that its interests are not limited but extend over the whole field of science, including both the natural sciences and the social sciences. In order to advance science effectively in all these fields the work of the Association is organized under 15 sections: mathematics, physics, chemistry, astronomy, geology and geography, zoological sciences, botanical sciences, anthropology, psychology, social and economic sciences, history and philosophy of science engineering, medical sciences, agriculture, and education. There are also special societies in each of these fields, some of them having very large memberships, which hold meetings and most of which publish journals of great importance. The Association is in no way a rival or competitor of these societies. Its purpose is to supplement their work and to provide opportunities for cooperation



among scientists who are specialists in different fields, and to provide leadership in this cooperation whenever leadership is needed. The value of such cooperation among scientists in related fields is confirmed at every meeting of the Association by the large number of joint programs of various sections and scientific societies which are held.

That the special societies understand the purposes of the Association and approval of its policies is clear from the fact that 189 of them are formally affiliated with the Association and most of them participate in its management. Nearly all of the older and stronger of these affiliated societies, particularly in the fields of the natural sciences, began as sections of the Association in the hopeful days of two or three generations ago. The Proceedings of the meetings of the Association for the first 50 years of its existence are precious records of the beginnings of many of these societies and of the high ideals of the pioneers in American science. It is an interesting fact that nowhere in these records is there expressed a hope for advancement in the natural sciences which has not been much more than realized. But over and over again there were confident predictions that through science mankind would progress steadily toward an era of universal plenty and peace.

For more than four years those confident predictions have been constantly violated and forgotten. Although man has learned how to control the physical world about him and has attained a rapidly increasing understanding and control of the animate world as well, he has completely failed to understand and control himself. Now that science has placed incomprehensibly vast resources of materials and power at the command of mankind, the task of setting worthier goals for human ambitions is one which scientists cannot ignore. Consequently in the evolution of science and society the original purposes of the Association must be enlarged, a subject that will be left for later discussion.

### The Ecological Society of America

The Ecological Society of America was founded on December 28, 1915, at Columbus, Ohio. The first action leading to the organization of the Society was taken at the Philadelphia meeting of the A.A.A.S. on December 30, 1914, when about 20 men interested in ecology met informally to discuss the project. This meeting was the direct result of a letter from R. H. Wolecott to Victor E. Shelford in March, 1914, in which he expressed the opinion that there were no ade-

quate meetings for plant and animal ecologists and that ecologists could profitably hold summer field meetings. He suggested the organization of a society of ecologists to meet these needs. The idea was enthusiastically supported by Dr. Shelford and H. C. Cowles whose efforts made possible the subsequent meeting at Philadelphia.

The feeling of the group at Philadelphia was so strongly in favor of such an ecological society that an organizing committee, consisting of J. W. Harshberger, Chairman, Victor E. Shelford, Vice Chairman, H. C. Cowles, Secretary-Treasurer, was appointed. It was through the efforts of this committee that about 50 interested individuals met at Columbus on December 28, 1915, and accomplished the formal organization under the name "The Ecological Society of America." A constitution proposed by the Organizing Committee was adopted and officers for 1916 were elected.

Much credit is due Forrest Shreve and A. O. Weese, who succeeded him as Secretary-Treasurer in 1920, for their untiring efforts in performing the duties of that office. Their long and generous service did much to maintain the continuity and promote the development of the organization in its early years. Since 1938 the offices of Secretary and Treasurer have been separated, the two officers serving overlapping three year terms. In addition to the four regular officers an Executive Committee is composed annually of the officers, two retiring presidents (two years each), the retiring secretary (for one year), and the chairman of one of the standing committees (elected annually).

The first complete membership list, published in the Handbook of The Ecological Society of America, No. 3, Vol. 1 of the Society Bulletin, March, 1917, included 307 names, 284 of whom are designated Charter Members. Other lists have appeared in numbers of the Bulletin in 1923, 1928, 1931, 1934, 1937, and 1942. There has been a steady growth of membership (with the exception of 1931-34, depression years) up to 684 in April, 1943. The increase since 1937 is 5.4 per cent. At the same time there has been a turnover in membership of about 32 per cent.

Classes of membership and corresponding annual or single dues are as follows: Associate members, \$1.00; Active members, \$5.00; Institutional members, \$6.00; Sustaining members, \$10.00; Sustaining institutional members, \$11.00; Contributing members, \$2.00-\$10.00 or more; Life members, \$100.00, single fee; Sustaining life members, \$200.00, single fee.

The annual winter meeting of the Society is held regularly with the A.A.A.S. and its affiliated societies. The program consists of several sessions for the presentation of papers, and of the annual business meeting. It regularly includes joint symposia or sessions for individual papers with the Botanical Society of America, American Society of Zoologists, Limnological Society of America, Entomological Society of America, and others. Numerous ecological symposia and other programs of invited papers have been arranged frequently. Summer meetings, sectional in

nature and usually including field trips as well as presentation of papers, have continued to be an important and characteristic feature of the Society's activities.

*Ecology* is one of the quarterly journals of the society published by the Brooklyn Botanic Garden, Brooklyn, N. Y., through the Lancaster Press, Inc., Lancaster, Pa. This journal was founded at the St. Louis meeting, 1919. Publication began with volume 1 in 1920 and has been continuous to the current volume, number 24, for 1943.

The first plans for *Ecology* were made in June, 1919, by Charles C. Adams, Barrington Moore, G. P. Burns and Norman Taylor while on a field trip in the Adirondacks. Through the efforts of Dr. Taylor the financial support of the Brooklyn Botanic Garden was obtained. Barrington Moore was the first editor. Since 1935 the journal has been directed by joint botanical and zoological editors.

*Ecological Monographs*, published by Duke University Press, is the other quarterly journal of the Society and is designed for the publication of more extensive papers. It was established in 1930 following the recommendations of the Committee on Ecological Monographs, Forrest Shreve, Chairman, V. E. Shelford and W. C. Allee, made to the Society at the New York meeting, December 28, 1928. Publication has been continuous since 1931, a volume each year. A. S. Pearse was the first editor of *Ecological Monographs*. Duke University Press provides valuable financial aid in meeting the annual deficit which the journal incurs.

In addition to these journals the Society publishes a quarterly *Bulletin* edited by the Secretary. It carries announcements and programs of the meetings, lists of members, committee activities and other Society business.

One of the primary purposes of those who were active in the founding of the Society was the promotion of field work. A natural corollary of that is the preservation of natural plant and animal communities in appropriate localities. Such work was begun in 1917 when Ellsworth Huntington, second president of the Society, appointed Victor E. Shelford as Chairman of the Committee on the Preservation of Natural Conditions for the United States. Through the encouragement and energy of Dr. Shelford the work of this and related committees has become one of the major activities of the Society.

At the present time there are seven standing committees as follows:

Committee on the Preservation of Natural Conditions for the United States.

Committee on the Preservation of Natural Conditions for Canada.

Committee for the Study of Plant and Animal Communities.

Committee on Applied Ecology.

Committee on Nomenclature.

Committee on Historical Records of The Ecological Society of America.

Committee on Quantitative Ecology.

WILLIAM A. DREYER,  
Secretary

## Membership in the Association

### Eligibility for Membership

Membership in the Association is open to all persons engaged in scientific work, whether in the fields of the natural or the social sciences; to all amateur scientists, whatever their special interests; and to all who desire to follow the advances of science and its effects upon civilization. Members having made substantial contributions to the advancement of science are eligible for election as fellows.

### Dues and Publications

Membership dues are \$5 per year, including subscriptions for the monthly A.A.A.S. BULLETIN and either the weekly journal *Science*, now in its 101st volume, or *The Scientific Monthly*, now in its 60th volume. *Science* is a journal for professional scientists; the *Monthly* is a nontechnical journal for the intelligent public. The Association also publishes technical symposia and nontechnical books on science that are available for members at prices substantially below those to the public.

### Organization and Meetings

The Association was founded in 1848, with an initial membership of 461. Papers in its early programs were classified as either natural philosophy or natural history. Now its work is organized under 16 sections and 189 associated societies having a total membership of over 500,000. Its annual meetings are the greatest regular gatherings of scientists in the world.

### Nominations and Applications for Membership

Members may submit nominations for membership at any time, and persons desiring to become members can obtain membership application forms from the Office of the Permanent Secretary, the Smithsonian Institution Building, Washington 25, D. C.

## Changes of Address

New addresses for the Association's record and for mailing the journals *Science* and *The Scientific Monthly*, as well as the A.A.A.S. BULLETIN, should be in the Office of the Permanent Secretary, Washington 25, D. C., at least two weeks in advance of the date when the change is to become effective.

## Officers of the Association

President, Charles F. Kettering; Permanent Secretary, F. R. Moulton; General Secretary, Otis W. Caldwell; Treasurer, W. E. Wrather.

Executive Committee: Burton E. Livingston, Chairman; Roger Adams, Otis W. Caldwell, Anton J. Carlson, Arthur H. Compton, Charles F. Kettering, Kirtley F. Mather, Walter R. Miles, F. R. Moulton, Elvin C. Stakman, and W. E. Wrather.



